

Up-Coming Diesel Fuel and Exhaust Emissions Regulations For Mobile Sources

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Topics Of Discussion

- **2006-2007 On-highway Fuel and Engine Exhaust Emission Standards**
 - Regulation Approach
 - Impact on DOD
 - Interaction with EPA
 - National Security Exemption Status
- **2007-2008 Non-road Fuel and Engine Exhaust Emission Standards**
 - Regulation Approach
 - Impact on DOD
 - National Security Exemption Status

Regulatory Approach

EPA finalized motor vehicle diesel fuel regulations and the heavy duty diesel motor vehicle exhaust emissions regulations in January 2001.

Took a dual approach to reduce air emissions by:

1. Reducing the diesel fuel sulfur content- take effect June 2006, that will reduce the sulfur content to 15ppm.
2. Establish more stringent exhaust emission standards- take effect January 2007.

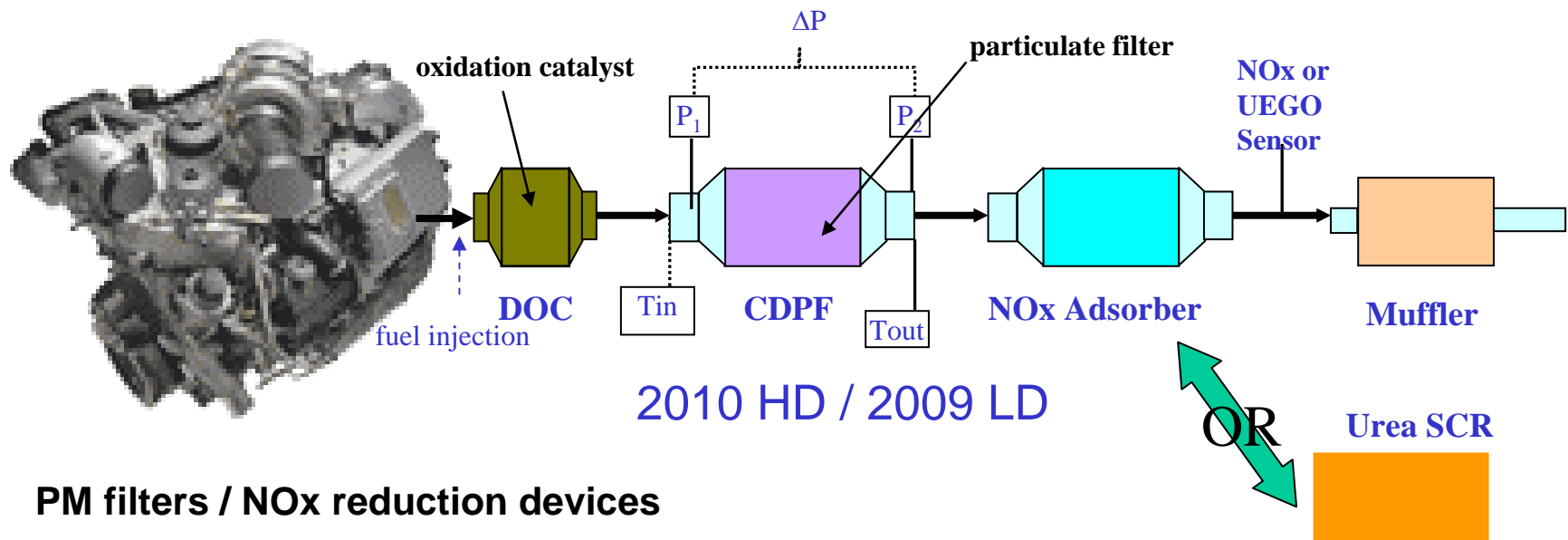
(Both regulations implemented with a phased approach)

Impacts to DoD

- **JP-8 used in ground tactical vehicles (i.e. HEMMTS, PLS, HMMWVs) fielded in the U.S. required to meet the 15 ppm sulfur requirement.**
- **Require DoD to Procure vehicles with pollution control technology.**
 - 2007 compliant engines will be equipped with Catalytic converts, PM filters, and other pollution control technologies
- **Not be able to operate world wide since low sulfur fuel is not available world wide:**
 - Pollution control technologies are intolerant to high sulfur fuel
 - Low sulfur diesel fuel, enabler for pollution control devices

Combat vehicles are not subject to fuel or emissions regulations (i.e. Abrams, Bradley, Stryker)

Aftertreatment Devices



- **PM filters / NOx reduction devices**
 - Catalyzed filters (DOC + CDPF)
 - NOx trap (adsorber) vs. Urea SCR (selective catalytic reductant)
 - Additional space claim , **conservatively 5 x engine displacement**
- **NOx reduction devices require 15 ppm fuel sulfur level**
- Likely to include high levels of EGR in additional to NOx aftertreatment device
 - higher heat rejection
- Push toward new oil formulation to extend CDPF lifetime
- Urea SCR requires on-vehicle, urea storage tank

DoD Interaction with EPA

- **Engaged with EPA**

- To have JP-8 excluded from diesel fuel regulations by definition, as EPA had determined in 1995.

In 1995, EPA determined that JP-8 did not meet EPA's definition of diesel fuel, thus would not be regulated as such (letter from EPA to Ms. Goodman, DUSD, 5, 1995.)

- Be able to use the existing regulatory process to obtain an NSE from MY2007 exhaust emissions standards.

- **End Result:**

- DoD to provide data to EPA by Dec. 2003 on tactical vehicles to obtain a National Security Exemption from Fuel Regulations
 - No changes under the new rule to existing NSE provisions for exhaust emission standards.

Approach Taken for the Motor Vehicle Fuel NSE

- TACOM was tasked to establish the NSE from the motor vehicle fuel regulation on behalf of DoD
- Established a DoD IPT to address the issue
- Approach taken:
 - Compiled a list of impacted vehicles (general categories) as required by the heavy duty diesel motor vehicle diesel fuel and exhaust emissions regulations (preamble)
 - Also defined “tactical vehicle” (ref. DoD 4500.36-R) as the means for coverage under the NSE

On-highway Fuel NSE Status

- EPA approved DoD's request for a NSE from the On-highway Motor Vehicle Diesel Fuel regulations in Nov. 2004
 - This will allow DoD to continue using the high sulfur military fuels (JP-8/JP-5) in “tactical vehicles” in the U.S.
 - Use of JP-8/JP-5 is **prohibited** in base operations vehicles, or other non-deployable vehicles

NSE From the 2007 Motor Vehicle Exhaust Emissions Standards

- Each Service to obtain NSE from the emission standards on its own as needed (per tasker)
 - TACOM has obtained a NSE from the 2007 motor vehicle exhaust emissions standards for its impacted “tactical vehicle” Fleet
- TACOM LCMC will assist the other services as needed

Non-road Diesel Fuel Regulations

- **EPA has taken a similar approach with non-road equipment by reducing sulfur in the diesel fuel and exhaust emission standards as a single system, finalized June 2004.**
 - Fuel regulations starting in July 2007
 - Different sulfur limits initially for different categories
 - Nonroad diesel fuel categories include: marine, locomotives, nonroad equipment
 - Exhaust emissions regulations-MY2008
 - Impact on DoD is similar to motor vehicle regulations

Both fuel and exhaust emissions standard phased in over time

Non-road Diesel Fuel NSE Status

- TACOM has been tasked to address this issue
- DoD IPT has been established
- Similar approach as the motor vehicle NSE
 - Currently working to define “tactical equipment”
 - Collecting data on Impacted Systems
 - Target completion end of June to meet Suspense

Non-road Fuel NSE (Once approved)

- It will allow DoD to use high sulfur military fuels (JP-8/JP-5) in “tactical equipment” (deployable)
- Use of high sulfur fuel that does not meet the requirements of the non-road diesel fuel regulations is **prohibited** from use in base operations vehicles/equipment.

Summary

- On-highway and non-road diesel fuel and emissions regulations impact DoD
- Due to many technical/performance and logistics issues DoD can not meet these requirements
 - EPA understands the issues and has granted the requested NSE from the motor vehicle fuel regulations
 - NSE from the Non-road diesel fuel regulations **in works**
- Currently a guidance is being developed by the Army Environmental Center for the installation

Questions/comments????

EPA Authority under the CAA

EPA obtains its authority to exempt engines/vehicles from emission standards under the CAA, section 203 b.

“b)(1) The Administrator may exempt any new motor vehicle or new motor vehicle engine from subsection (a), upon such terms and conditions as he may find necessary for the purpose of research, investigations, studies, demonstrations, or training, or for reasons of national security.”

EPA Definition of Motor Vehicle

Motor Vehicle--85.1703 Application of section 216(2).

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(a) For the purpose of determining the applicability of section 216(2), a vehicle which is self-propelled and capable of transporting a person or persons or any material or any permanently or temporarily affixed apparatus shall be deemed a motor vehicle, unless any one or more of the criteria set forth below are met, in which case the vehicle shall be deemed not a motor vehicle and excluded from the operation of the Act:

(1) The vehicle cannot exceed a maximum speed of 25 miles per hour over level, paved surfaces; or

(2) The vehicle lacks features customarily associated with safe and practical street or highway use, such features including, but not being limited to, a reverse gear (except in the case of motorcycles), a differential, or safety features required by state and/or federal law; or

(3) The vehicle exhibits features which render its use on a street or highway unsafe, impractical, or highly unlikely, such features including, but not being limited to, tracked road contact means, an inordinate size, or features ordinarily associated with military combat or tactical vehicles such as armor and/or weaponry.

(b) The Administrator will, from time to time, publish in the Federal Register a list of vehicles which have been determined to be excluded. This list will be in appendix VI of 40 CFR part 85.

EPA Definition of Non-road Engine

Nonroad engine means- (40 CFR,89.2)

(1) Except as discussed in paragraph (2) of this definition, a nonroad engine is any internal combustion engine:

(i) In or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function (such as garden tractors, off-highway mobile cranes and bulldozers); or

(ii) In or on a piece of equipment that is intended to be propelled while performing its function (such as lawnmowers and string trimmers); or

(iii) That, by itself or in or on a piece of equipment, is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform.

Diesel Fuel & Motor Vehicle Diesel Fuel

80.2 Definitions

(x) ***Diesel fuel*** means any fuel sold in any state or Territory of the United States and suitable for use in diesel motor vehicles, diesel motor vehicle engines or diesel non-road engines, and which is commonly or commercially known or sold as diesel fuel.

(y) ***Motor vehicle diesel fuel*** means any diesel fuel, or any distillate product, that is used, intended for use, or made available for use, as a fuel in diesel motor vehicles or diesel motor vehicle engines.